IN THE CLAIMS

1. (Currently Amended) A wave-front aberration measuring method with which to measure wave-front aberration of an optical system, said measuring method comprising:

measuring aberration components of a first set of orders out of a plurality of aberration components obtained by expanding the wave-front aberration of said optical system using a predetermined basis;

calculating correction information for aberration components of a second set of orders, based on an aberration ~~components of predetermined orders~~ component of a predetermined order out of the measured aberration components of said first set of orders;

measuring aberration components of said second set of orders of said optical system; and

correcting ~~the~~ a result of said measuring of aberration components of said second set of orders based on said correction information.

2. (Currently Amended) ~~A~~ The wave-front aberration measuring method according to claim 1, wherein the plurality of aberration components is obtained by expanding the wave-front aberration of said optical system using fringe Zernike polynomials.

3. (Currently Amended) ~~A~~ The wave-front aberration measuring method according to claim 1, wherein

said first set of orders includes all of a lowest order through a first ordinal order in said expansion, and

said second set of orders includes all of said lowest order through a second ordinal order in said expansion, said second ordinal being lower than said first ordinal.

4. (Currently Amended) ~~A~~ The wave-front aberration measuring method according to claim 3, wherein

said predetermined ~~orders are~~ order is included in said first set of orders and not included in said second set of orders,

calculating said correction information comprises:

calculating a first wave-front in which aberration components of ~~other~~ orders other than said predetermined ~~orders~~ order out of said measured first set of orders are zero; and

calculating as said correction information respective correction amounts for aberration components of said second set of orders, based on a model for a measuring system that measures aberration components of said second set of orders and on said first wave-front, and

in correcting based on said correction information, the measured aberration components of said second set of orders are individually corrected.

5. (Currently Amended) ~~A~~ The wave-front aberration measuring method according to claim 3, wherein

said predetermined ~~orders are~~ order is included in said first set of orders and not included in said second set of orders,

calculating said correction information comprises calculating as said correction information a first wave-front in which aberration components of ~~other~~ orders other than said predetermined ~~orders~~ order out of said measured first set of orders are zero, and

correcting based on said correction information comprises:

calculating a second wave-front that has aberration components of said second set of orders measured by a measuring system that measures aberration components of said second set of orders;

calculating a third wave-front by correcting said second wave-front based on said first wave-front; and

calculating corrected aberration components of said second set of orders, based on said third wave-front and a model for said measuring system.

6. (Currently Amended) ~~A~~ The wave-front aberration measuring method

according to claim 1, wherein measuring aberration components of said second set of orders comprises:

forming a plurality of pattern images by dividing a wave-front of light having passed through said optical system using a predetermined optical system; and

calculating aberration components of said second set of orders, based on positions of said plurality of pattern images.

7. (Currently Amended) ~~A~~ The wave-front aberration measuring method according to claim 1, wherein measuring aberration components of said second set of orders comprises:

placing a plurality of divided pattern areas on which a plurality of patterns are formed, at ~~the~~ an object plane of said optical system, said plurality of patterns producing light passing through ~~a~~ respective areas of a plurality of areas on ~~the~~ a pupil plane of said optical system,

imaging images of said plurality of patterns respectively formed on said plurality of divided pattern areas through said optical system; and

calculating aberration components of said second set of orders, based on positions of images of said plurality of patterns imaged by said optical system.

8. (Currently Amended) A wave-front aberration measuring apparatus which

measures wave-front aberration of an optical system, said measuring apparatus comprising:

a storage unit that stores correction information for aberration components of a second set of orders, said correction information being calculated based on an aberration ~~components of predetermined orders~~ component of a predetermined order out of aberration components of a first set of orders out of a plurality of aberration components obtained by expanding the wave-front aberration of said optical system using a predetermined basis;

a measuring system that measures aberration components of said second set of orders of the wave-front aberration of said optical system; and

a correcting unit coupled to said storage unit and said measuring system, which corrects ~~the~~ a measuring result of said measuring system using said correction information.

9. (Currently Amended) ~~A~~ The wave-front aberration measuring apparatus according to claim 8, wherein the plurality of aberration components is obtained by expanding the wave-front aberration of said optical system using fringe Zernike polynomials.

10. (Currently Amended) ~~A~~ The wave-front aberration measuring apparatus according to claim 8, wherein said measuring system comprises:

a wave-front dividing device positioned to divide a wave-front of light having passed through said optical system to form images of a plurality of patterns; and

an aberration-component calculating unit coupled to said correcting unit, which calculates aberration components of said second set of orders, based on positions of the images of said plurality of patterns.

11. (Currently Amended) ~~A~~ The wave-front aberration measuring apparatus according to claim 10, wherein said wave-front dividing device is a micro-lens array where lens elements are arranged in a matrix.

12. (Currently Amended) ~~A~~ The wave-front aberration measuring apparatus according to claim 8, wherein said measuring system comprises:

a pattern-formed member that is placed on ~~the~~ an object ~~plane's~~ plane side of said optical system and has a plurality of divided pattern areas on which a plurality of patterns are formed, said plurality of patterns producing light passing through respective areas of a plurality of areas on ~~the~~ a pupil plane of said optical system; and

an aberration-component calculating unit coupled to said correcting unit, which calculates aberration components of said second set of orders, based on positions of images of said plurality of patterns.

13. (Currently Amended) An exposure apparatus which transfers a pattern onto a substrate, said apparatus comprising:

an exposure apparatus main body that comprises a projection optical system

arranged on ~~the~~ an optical path of exposure light; and

a wave-front aberration measuring apparatus according to claim 8 with said projection optical system as an optical system.

14. (Original) A device manufacturing method including a lithography process, wherein in the lithography process, an exposure apparatus according to claim 13 performs exposure.

15. (Original) A device manufactured according to the device manufacturing method of claim 14.

16. (Currently Amended) A wave-front aberration measuring method with which to measure wave-front aberration of a projection optical system that projects a pattern onto a substrate, said measuring method comprising:

measuring aberration components of a second set of orders out of aberration components of a first set of orders included in a wave-front aberration of said projection optical system; and

correcting said measured aberration components of said second set of orders, based on a predetermined ~~orders~~ order that ~~are~~ is included in aberration components of said first set of orders and not included in aberration components of said second set of orders.

17. (Currently Amended) ~~A~~ The wave-front aberration measuring method

according to claim 16, wherein aberration components of said first set of orders are measured before measuring aberration components of said second set of orders.

18. (Currently Amended) ~~A~~ The wave-front aberration measuring method according to claim 17, wherein aberration components of said first set of orders are measured before said projection optical system is installed in an exposure apparatus main body.

19. (Currently Amended) ~~A~~ The wave-front aberration measuring method according to claim 18, wherein aberration components of said first set of orders are obtained by expanding the wave-front aberration of said projection optical system using a predetermined basis.

20. (Currently Amended) ~~A~~ The wave-front aberration measuring method according to claim 19, wherein aberration components of said first set of orders are obtained by expanding the wave-front aberration of said projection optical system using fringe Zernike polynomials.

21. (Currently Amended) ~~A~~ The wave-front aberration measuring method according to claim 18, wherein aberration components of said second set of orders are measured by a measuring system different from the measurement of aberration components of said first set of orders.

22. (Currently Amended) ~~A~~ The wave-front aberration measuring method according to claim 21, wherein said measuring system measuring aberration components of said second set of orders is based on the Shack-Hartmann technique.

23. (Currently Amended) ~~A~~ The wave-front aberration measuring method according to claim 21, wherein

said measuring system has a micro-lens array that divides a wave-front of light having passed through said projection optical system, and

aberration components of said second set of orders are calculated based on positions of a plurality of pattern images formed by said micro-lens array.

24. (Currently Amended) A wave-front aberration measuring apparatus which measures wave-front aberration of a projection optical system that projects a pattern onto a substrate, said measuring apparatus comprising:

a measuring system arranged in said projection optical system, which measures aberration components of a second set of orders out of aberration components of a first set of orders included in a wave-front aberration of said projection optical system; and

a correcting unit coupled to said measuring system, which corrects said measured aberration components of said second set of orders, based on a predetermined ~~orders~~ order that ~~are~~ is included in aberration components of said first set of orders and not included in

aberration components of said second set of orders.

25. (Currently Amended) ~~A~~ The wave-front aberration measuring apparatus according to claim 24, wherein aberration components of said first set of orders are measured before said projection optical system is installed in an exposure apparatus main body.

26. (Currently Amended) ~~A~~ The wave-front aberration measuring apparatus according to claim 24, wherein aberration components of said first set of orders are obtained by expanding the wave-front aberration of said projection optical system using a predetermined basis.

27. (Currently Amended) ~~A~~ The wave-front aberration measuring apparatus according to claim 26, wherein aberration components of said first set of orders are obtained by expanding the wave-front aberration of said projection optical system using fringe Zernike polynomials.

28. (Currently Amended) ~~A~~ The wave-front aberration measuring apparatus according to claim 24, wherein aberration components of said second set of orders ~~is~~ are measured by a measuring system different from the measurement of aberration components of said first set of orders.

29. (Currently Amended) ~~A~~ The wave-front aberration measuring apparatus

according to claim 28, wherein the measuring system measuring aberration components of said second set of orders is based on the Shack-Hartmann technique.

30. (Currently Amended) ~~A~~ The wave-front aberration measuring apparatus according to claim 29, wherein said measuring system has a micro-lens array that divides a wave-front of light having passed through said projection optical system.

31. (Currently Amended) An exposure apparatus which transfers a predetermined pattern onto a substrate using a projection optical system, said apparatus comprising:

an adjusting unit coupled to the wave-front aberration measuring apparatus of claim 24, which adjusts ~~the~~ an imaging characteristic of said projection optical system, based on ~~the~~ a measuring result of said wave-front aberration measuring apparatus.